Annual Review of Phytopathology
Volume 32, 1994

CONTENTS

PREFATORY CHAPTER

Plant Pathology—A 55-Year Retrospective, *George A. Zentmyer* 1

PIONEER LEADERS

Harry Marshall Ward, 1854–1906, *G. C. Ainsworth* 20

Tom Goodey: The Father of Nematology in Britain, *David J. Hooper* 26

Frederick Charles Bawden: Plant Pathologist and Pioneer in Plant Virus Research, *B. D. Harrison* 39

DIAGNOSIS AND APPRAISAL OF PLANT DISEASE

Ash Yellows and Its Relationship to Dieback and Decline of Ash, *Wayne A. Sinclair, Helen M. Griffiths* 49

Dogwood Anthracnose: A New Disease Threatens Two Native *Cornus* Species, *M. L. Daughtrey, C. R. Hibben* 61

Major New Tree Disease Epidemics: Beech Bark Disease, *D. R. Houston* 75

PATHOGENS: FUNGI

Population Genetics of Plant Pathogen Interactions: The Example of *Erysiphe graminis-Hordeum vulgare* Pathosystem, *M. S. Wolfe, J. M. McDermott* 89

Double-Stranded RNAs in the Rust Fungi, *R. Zhang, M. J. Dickinson, A. Pryor* 115

PATHOGENS: BACTERIA AND OTHER PROKARYOTES

Molecular Systematics and Population Biology of Rhizoctonia, *R. Vilgalys, M. A. Cubeta* 135

The Virulence System of *Agrobacterium Tumefaciens, Paul J. J. Hooykas, Alice G. M. Beijersbergen* 157

Secretion of Extracellular Virulence Factors by Plant Pathogenic Bacteria, *George P. C. Salmond* 181

(continued)

Extracellular Enzymes and Pathogenesis of Soft-Rot Erwinia, *Frédéric Barras, Frédérique van Gijsegem, Arun K. Chatterjee* 201

PATHOGENS: NEMATODES

Parasitic Strategies of Root Nematodes and Associated Host Cell Responses, *P. C. Sijmons, H. J. Atkinson, U. Wyss* 235

PATHOGENS: VIRUSES

Molecular Biology and Evolution of Closteroviruses: Sophisticated Build-up of Large RNA Genomes, *Valerian V. Dolja, Alexander V. Karasev, Eugene V. Koonin* 261

cis-Acting Sequences in the Replication of Plant Viruses with Plus-Sense RNA Genomes, *Rohit Duggal, Frederick C. Lahser, Timothy C. Hall* 287

Plant Viral RNA Synthesis in Cell-Free Systems, *M. De Graaff, E. M. J. Jaspars* 311

RNA-RNA Recombination and Evolution in Virus-Infected Plants, *A. E. Simon, J. J. Bujarski* 337

Seed Transmission of Viruses: Current Perspectives, *Elisabeth Johansen, Michael C. Edwards, Richard O. Hampton* 363

PHYSIOLOGY, MORPHOLOGY, ANATOMY

Plasmodesmata in Relation to Viral Movement within Leaf Tissues, *William J. Lucas, Robert L. Gilbertson* 387

Developmental Regulation of Fungal Cell Wall Formation, *J. G. H. Wessels* 413

Induction of Systemic Acquired Disease Resistance in Plants by Chemicals, *Helmut Kessmann, Theo Staub, Christina Hofmann, Thomas Maetzke, Jürg Herzog, Eric Ward, Scott Uknes, John Ryals* 439

BIOCHEMISTRY AND MOLECULAR BIOLOGY OF HOST-PATHOGEN INTERACTIONS

Molecular Mechanisms of Fungal Pathogenicity to Plants, *Wilhelm Schäfer* 461

Early Events in the Activation of Plant Defense Responses, *R. A. Dixon, M. J. Harrison, C. J. Lamb* 479

EPIDEMIOLOGY AND INFLUENCE OF CLIMATE

On Spread of Plant Disease: A Theory on Foci, *J. C. Zadoks, F. van den Bosch* 503

Modeling Stochastic Processes in Plant Pathology, *M. Shaw* 523

TOXICANTS AND CHEMICAL CONTROL

Social and Political Implications of Managing Plant Diseases with Decreased Availability of Fungicides in the United States, *N. N. Ragsdale, H. D. Sisler* 545

Social and Political Implications of Managing Plant Diseases with Restricted Fungicides in Europe, *M. Lodovica Gullino, Laetitia A. M. Kuijpers* 559

BIOLOGICAL AND CULTURE CONTROL

Biological Control of Chestnut Blight in Europe, *Ursula Heiniger, Daniel Rigling* 581

SPECIAL TOPICS

The Role of Plant Clinics in Disease Diagnosis and Education: A North American Perspective, *Larry W. Barnes* 601

INDEXES

Subject Index 611

Cumulative Index of Contributing Authors, Volumes 23–32 627

Cumulative Index of Chapter Titles, Volumes 23–32 631